

# 3A2A

## Half-Wave Vacuum Rectifier

### 9-PIN MINIATURE TYPE

Designed to minimize X-Radiation

$-e_{bm} = 20,000$  max. V       $i_{bm} = 80$  mA

#### ELECTRICAL CHARACTERISTICS — Bogey Values

Heater Voltage, ac or dc	$E_h$	3.15	V
Heater Current at $E_h = 3.15$ V	$I_h$	0.22	A
Direct Interelectrode Capacitance: <sup>a</sup>			
P to (K + IS + H)	$c_{p-all}$	1.0	pF
Instantaneous Tube Voltage			
Drop for Instantaneous			
Plate Current ( $i_b$ ) = 7 mA	$e_b$	70	V

#### MECHANICAL CHARACTERISTICS

Maximum Overall Length	.2844in. (72.24 mm)
Maximum Seated Length	.2562in. (65.07 mm)
Maximum Diameter	.0875in. (22.22 mm)
Envelope	JEDEC T6½
Top Cap	Skirted Miniature (JEDEC NO. CI-2, CI-33 or CI-45)
Base	Small-Button Noval 9-pin (JEDEC E9-I)
Terminal Diagram	JEDEC 9DT
Type of Cathode	Coated Unipotential
Operating Position	Any

#### MAXIMUM RATINGS<sup>b</sup> — High Voltage Rectifier

*For operation as a pulsed rectifier tube in a 525-line, 30-frame system<sup>c</sup>*

Inverse Plate Voltage <sup>d</sup>			
Total DC and Peak (absolute max.)	$-e_{bm}$	20,000	V
Average (absolute max.)	$E_{b(av)}$	18,000	V
Plate Current:			
Peak (design max.)	$i_{bm}$	80	mA
Average (design max.)	$I_{b(av)}$	1.5	mA
Heater Voltage (absolute max.)	$E_h$	3.65	V
Heater Voltage (absolute min.)	$E_h$	2.65	V

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- <sup>a</sup> Measured without external shield in accordance with the current issue of EIA Standard RS-191B.
- <sup>b</sup> As defined in the current issue of EIA Standard RS-239A.
- <sup>c</sup> As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- <sup>d</sup> This rating is applicable when the duration of the voltage pulse does not exceed 15% of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 $\mu$ s.

### OPERATING CONSIDERATIONS

*Socket Connections.* The base pins of the 3A2A fit the standard noval socket. Socket terminals 1, 3, 4, 6, and 7 may be connected to terminal 9 or to a corona shield which connects to terminal 9. Terminals 3 and 7 may be used as tie points at or near cathode potential. Otherwise, do not use.

*Measurement of Heater Voltage.* It is recommended that a thermocouple rms voltmeter be used to measure heater voltage. The meter and its leads must be insulated to withstand 20,000 V. To minimize loading of the rectifier circuit during this measurement, stray capacitances to ground should be kept as low as possible.

### X-RADIATION CHARACTERISTIC

#### X-Radiation, Maximum

*Statistical Value Controlled On A Lot*

*Sampling Basis . . . . . 0.5mR/hr*

X-Radiation is measured in accordance with JEDEC Publication No. 67 A, "Recommended Practice for Measurement of X-Radiation from Receiving Tubes", and controlled in accordance with JEDEC Publication No. 73 A, "Recommended Practice for Quality Control of X-Radiation Emitted from High Voltage Rectifier and Shunt Regulator Receiving Tubes".

Operation of the 3A2A outside of the absolute values indicated above may result in either temporary or permanent

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changes in the X-radiation characteristic of the tube. Equipment design must be such that these absolute values are not exceeded.

### **WARNING**

#### **X-Radiation**

The high voltages associated with the 3A2A result in production of X-Radiation which may constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Equipment design must provide for this shielding.

Precautions must be exercised during the servicing of equipment employing the 3A2A to assure that the high voltage is adjusted to the recommended value and that any shielding components are replaced to their intended positions before the equipment is operated.

#### **SHOCK HAZARD**

The high voltages at which the 3A2A is operated can be extremely dangerous to the user or serviceman. Extreme care should be taken in the use of, and for the servicing and adjustment of, any high voltage circuit.

Precautions must be exercised during the replacement or servicing of the 3A2A in equipment to assure that the high voltage output terminal is properly grounded while inserting or removing the tube from its socket or while connecting or disconnecting the top cap connector.

**THE EQUIPMENT MANUFACTURER SHOULD PROVIDE A WARNING LABEL IN AN APPROPRIATE POSITION ON THE EQUIPMENT TO ADVISE THE SERVICEMAN OF ALL PRECAUTIONS HEREIN.**

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## TERMINAL DIAGRAM – JEDEC 9RT – Bottom View

Pin 1 – Heater, Cathode,  
Internal Shield

Pin 2 – Heater

Pin 3 – Do Not Use

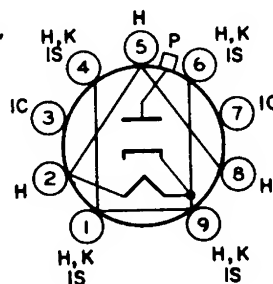
Pin 4 – Same as Pin 1

Pin 5 – Heater

Pin 6 – Same as Pin 1

Pin 7 – Do Not Use

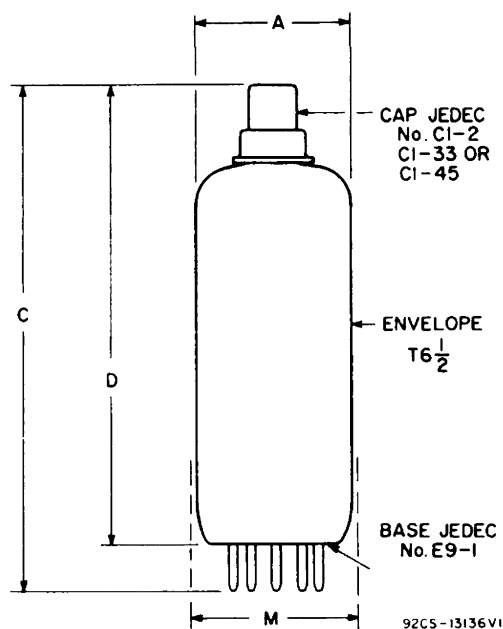
Pin 8 – Heater



Pin 9 – Same as  
Pin 1

Cap – Plate

## DIMENSIONAL OUTLINE



DIMENSION	INCHES			MILLIMETERS		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A*	0.800	—	0.845	20.32	—	21.46
C	—	—	2.844	—	—	72.24
D	2.312	2.347	2.562	58.72	61.90	65.07
M*	—	—	0.875	—	—	22.22
MILLIMETER DIMENSION DERIVED FROM INCH DIMENSION						
*As defined in the current issue of EIA standards RS-209-A1.						